

REMARKS

Rejections under 35 U.S.C. 103(a)

The office action sets out a number of rejections under 35 U.S.C. 103(a) based upon a common combination of four references. These rejections will be discussed collectively and include the following:

(1) Claims 1-6, 9-12, 14, 29-32, 37, 53 and 94-97 stand rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art, Sordelet et al (6,242,108) or Darolia et al (6,749,951) in view of Thoma et al (4,895,625) and Foster et al (4,789,441).

(2) Claims 15-17 stand rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art, Sordelet et al (6,242,108) or Darolia et al (6,749,951) in view of Thoma et al (4,895,625) and Foster et al (4,789,441) as applied to claims ---above, and further in view of Luch.

(3) Claims 7,8,18-27, 33-36, 38-40, 50, 51, 55-57 and 68-70 stand rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art, Sordelet et al (6,242,108) or Darolia et al (6,749,951) in view of Thoma et al (4,895,625) and Foster et al (4,789,441) as applied to claims 1-6, 9-12, 14, 29-32, 37, 53 and 94-97 above, and further in view of the Lowenheim text, *Electroplating*.

(4) Claims 28, 41, 52, 58 and 67 stand rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art, Sordelet et al (6,242,108) or Darolia et al (6,749,951) in view of Thoma et al (4,895,625) and Foster et al (4,789,441) as applied to claims 1-6, 9-12, 14, 29-32, 37, 53 and 94-97 above, and further in view of Foster (5,833,829).

(5) Claims 42 and 43 stand rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art, Sordelet et al (6,242,108) or Darolia et al (6,749,951) in view of Thoma et al (4,895,625) and Foster et al (4,789,441) as applied to claims 1-6, 9-12, 14, 29-32, 37, 53 and 94-97 above, and further in view of Oguto et al (5,792,333).

(6) Claims 59-66 stand rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art, Sordelet et al (6,242,108) or Darolia et al (6,749,951) in view of Thoma et al (4,895,625) and Foster et al (4,789,441) as applied to claims 1-6, 9-12, 14, 29-32, 37, 53 and 94-97 above, and further in view of Biner et al (5,851,317).

Each of these six rejections are based on Sordelet et al (6,242,108) or Darolia et al (6,749,951) in view of Thoma et al (4,895,625) and Foster et al (4,789,441). These four references will be discussed below.

Sordelet (US 6,242,108) discloses an abrasion resistant coating created by adding a ductile phase to a brittle matrix phase during spray coating where an Al-Cu-Fe quasicrystalline phase (brittle matrix) and an FeAl intermetallic (ductile phase) are combined. (Sordelet, Abstract). Sordelet states that “quasicrystals are a relatively new class of materials which exhibit unusual atomic structure and useful physical and chemical properties.” (Sordelet, col. 1, lines 12-14). These unique qualities include “reduced surface energy compared to crystalline metals and their oxides” and “extremely low thermal and electrical conductivities”. (Sordelet, col. 1, lines 29-33). Accordingly, Sordelet recognizes that quasicrystals are a “new class of materials.”

Darolia (US 6,749,951) discloses a layered coating over a substrate. The layers include a ductile metallic layer over the substrate and a protective layer overlying the ductile metallic layer. The protective layer includes a quasicrystalline metallic phase and a non-quasicrystalline ductile phase. (Darolia, Abstract). While Darolia makes the general statement that “[t]he application of

layers 36 and 38 is by any operable method” (Darolia, col. 6, lines 50-51), Darolia states that the “[p]referred application techniques used in step 62 include physical vapor deposition techniques such as electron beam physical vapor deposition, sputtering, and cathodic arc, and plasma spray techniques such as air plasma spray, low pressure plasma spray, and high velocity oxyfuel deposition.” (Darolia, col. 6, lines 53-58). Darolia does not address electrodeposition, but rather provides only a specific teaching of physical vapor deposition and plasma spray techniques.

Thoma (US 4,895,625) discloses a dispersion coating method for obtaining a coating that includes a cobalt and/or nickel matrix having embedded metal alloy particles. (Thoma, col. 2, lines 44-49). Significantly, Thoma’s disclosure is limited to specific, well-characterized metal alloy particles, such as MCrAlY alloys. Thoma does not mention quasicrystals.

Foster et al. (US 4,789,441) discloses composite electrodeposition of a metal matrix containing particles of CrAlM₂. Foster does not mention quasicrystals.

The examiner states that “[i]t would have been obvious to have formed a quasicrystalline containing coating by electrodeposition from a bath containing quasicrystalline particles and an elemental metal as taught by Thoma et al and Foster et al in place of convention methods such as plasma spraying as taught by the admitted prior art, Sordelet et al and Darolia et al because the electrodeposition process is more economical and is known to produce a coating with desirable properties.” (Office Action, page 4, paragraph 10). Applicant would first point out that Thoma and Foster do not disclose the use of quasicrystalline particles in any manner. The MCrAlY alloys disclosed by Thoma and the CrAlM₂ alloys disclosed by Foster are part of a different class of materials. As pointed out by Sordelet, quasicrystals are a “new class of materials.” (Sordelet, col. 1, lines 12-14). Therefore, neither Thoma nor Foster disclose or teach the use of quasicrystals.

The Applicant asserts that the Examiner's burden under 103 has not been met. As is well known, to establish a prima facie case of obviousness, three basic criteria must be met: 1) there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings; 2) there must be a reasonable expectation of success; and 3) the prior art reference must teach or suggest *all the claim limitations*. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure. *In re Vaeck*, 947 F. 2d 488, 20 USPQ 2d 1438 (Fed. Cir. 1991).

The initial burden is on the examiner to provide some suggestion of the desirability of doing what the inventor has done. "To support the conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references." *Ex parte Clapp*, 227 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985).

For prior art references to be combined to render obvious a subsequent invention under 35 U.S.C. Section 103, there must be something in the prior art as a whole which suggests the desirability, and thus the obviousness, of making the combination. *Uniroyal v. Rudkin-Wiley*, 5 U.S.P.Q.2d 1434, 1438 (Fed. Cir. 1988). The teachings of the references can be combined only if there is some suggestion or incentive in the prior art to do so. *In re Fine*, 5 U.S.P.Q.2d at 1599 (Fed. Cir. 1988). Hindsight is strictly forbidden. It is impermissible to use the claims as a framework from which to pick and choose among individual references to recreate the claimed invention. *Id.* at 1600; *W.L. Gore*, 220 U.S.P.Q. at 312. Moreover, the mere fact that a prior art structure could be modified to produce the claimed invention would not have made the modification obvious unless the prior art suggested the desirability of the modification. *In re*

Fritch, 23 U.S.P.Q.2d 1780, 1783 (Fed. Cir. 1992); *In re Gordon*, 221 U.S.P.Q. 1125, 1127 (Fed. Cir. 1984).

Thus, a rejection under 35 U.S.C. Section 103 grounded on a combination of references cannot be sustained unless the particular combination is suggested by the prior art itself. Applicant asserts that the prior art makes no suggestion to combine Sordelet et al (6,242,108), Darolia et al (6,749,951), Thoma et al (4,895,625) and Foster et al (4,789,441) and that the Examiner has not met his affirmative duty to show such a teaching in the art. Reconsideration and withdrawal of the rejection is respectfully requested.

The cited references do not seem to make out anything more than an “invitation to explore.” Even if the prior art made a suggestion that would make an invention “obvious to try”, this does not make that invention obvious. The Board has stated that these are improper standards of obviousness. In the case of *Ex part Obukowicz*, 27 USPQ2d 1063 (B.P.A.I. 1992), the Board held that a statement in a reference (“the Dean reference”) regarding combating mosquitos using genetically engineered “natural pond microflora” was insufficient to provide the necessary suggestion or modification. As stated by the Board:

[T]he specific statement by Dean is not a suggestion to insert the gene into the chromosome of bacteria and apply that bacteria to the plant environment in order to protect the plant. At best, the Dean statement is but an invitation to scientists to explore a new technology that seems a promising field of experimentation. The Dean statement is of the type that gives only general guidance and is not at all specific as to the particular form of the claimed invention and how to achieve it. Such a suggestion may make an approach “obvious to try” but it does not make the invention obvious.

Id. at 1065 (citing *In re O’Farrell*, 853 F.2d 894 (Fed. Cir. 1988)).

Still further, it would not be enough for the cited prior art to suggest the combination of elements recited in the claims; there must also be some reasonable expectation of success before the suggested combination can be found to be obvious. *In re Vaeck*, 947 F. 2d 488, 20 USPQ 2d

1438 (Fed. Cir. 1991). Here, the references do not suggest a combination of the claim elements and provide no reasonable expectation of success. Reconsideration and withdrawal of the rejection is requested.

In the event there are additional charges in connection with the filing of this Response, the Commissioner is hereby authorized to charge the Deposit Account No. 50-0714/LYNN-0172 of the firm of the below-signed attorney in the amount of any necessary fee.

Respectfully submitted,

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